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#### ABSTRACT

Super's Career Development Inventory (CDI) was adapted to Brazilian culture and applies in a sample of 1048 students of Guanabara State's high schools. Since its purpose is to observe a maturation process, the CDI was administered to the two last grades of grade school and the first two grades of high school, where the students have from seven to ten years of schooling. A test of difference of means was carried out. The differences were statistically significant between the last grade of grade school and the first grade of high school in all scales of CDI. In a breakdown sex, the results were not very different from the total grade results. These differences must be interpreted with caution because the scores were obtained not only from different grades but also across different school systems. Only the grade school is compulsory in Brazil, so a natural selection can happen. These results did not allow the author to reach a firm conclusion about the use of CDI for Brazilian students. Some suggestions on the format of CDI's scale and on the experience provided by the schools was made. Norms provisionally established are included in the appendix. (Author)

#### SUPER CAREER DEVELOPMENT INVENTORY

Form I

# PRELIMINARY RESEARCH AND FIELD TRIAL IN BRAZIL

by
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GETULIO VARGAS FOUNDATION

Rio de Janeiro GB

Brazil

1974

#### **ABSTRACT**

Super's Career Development Inventory (CDI) was adapted to Brazilian culture and applies in a sample of 1048 students of Guanabara State's high schools. Since its purpose is to observe a maturation process, the CDI was administered to the two last grades of grade school and the first two grades of high school, where the students have from seven to ten years of schooling. A test of difference of means was carried out. The differences were statistically significant between the last grade of grade school and the first grade of high school in all scales of CDI. In a breakdown by sex, the results were not very different from the total grade results. differences must be interpreted with caution because the scores were obtained not only from different grades but also across different school systems. Only the grade school is compulsory in Brazil, so a natural selection can happen.

These results did not allow the author to reach a firm conclusion about the use of CDI for Brazilian students. Some suggestions on the format of CDI's scale and on the experience provided by the schools was made.

Norms provisionally established are included in the appendix.



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#### Introduction

The problem of construction of an instrument to measure vocational maturity is very precarious in Brazil. This is primarily due to the fact that vocational counseling is practically non-existent in our school system.

Some years ago counseling was practiced only in specialized institutions and only students in the higher socioeconomic brackets could attend these institutions.

Although, in the last two decades, many teachers have been interested in this topic, only a few efforts at studying it have been carried out. Many teachers have been anxious to develop in their students some sources of information on the choice of a career, but have had no instruments to work with

These factors, primarily lack of counseling experience in the school, made the translation and adaptation of the Career Development Inventory (CDI) very difficult and probably these factors will affect the results of the study.

# Purpose and Procedure of the Study

#### Purpose

In August, 1971, Brazil passed a new law that changed the orientation of the Brazilian education system from a purely academic system for the elite to a more popular system designed to educate all social levels in more practical



vocations; that is, Brazilian educational system is now more job oriented at the secondary school level. Because of this change in orientation the problem of vocational choice is now a subject that is of interest to many counselors and psychologists. That is, we now have to study the possibility of having the types of training in high schools that give, as soon as possible, the kinds of experiences necessary to develop vocational maturity in the students.

The invitation of Dr. Super to work on a cross-cultural study on this very topic came at a very opportune moment. Although we know that our initial results will be tentative because we are adapting an instrument made for the U.S.A., where experience in this field is much richer, we hope to compare our results with those of other countries similar to us in level of development, and through this initial experience plan further work here in Brazil.

## Procedure of the Study

The study was carried out in five phases:

- a) Translation and adaptation.
- b) Administration of the first version in a pilot study to test student comprehension of the text.
- c) Rewriting some items.
- d) Experimental administration.
- e) Analysis of results.

# Translation and Adaptation

Besides the problems that we have already considered, we also have the problem of Brazilian students being unfamiliar with standardized tests. Because of this problem we changed the format of scales A and B to repeat in all questions the five options. We thought that this procedure would more readily assure comprehension of the text. Unfortunately, this repetition increased the reading time. Although we have no direct evidence that increased reading time could have led to fatigue in responding to the inventory, this may in fact have occurred and in turn could have affected our results.

Questions 38 and 58 of the B scale were translated as "teacher of physical education" instead of "coach" because we do not have coaches in our schools, and given the same weight as for "teachers."

The weights of questions 47 and 61 were also changed to 2 because we have some newspapers and TV programs made especially for the students giving specific information in areas of vocational choice, and which also employ technical consultants as sources of information for writing and programming.

With the C scale we had more trouble. In questions 62 and 63, where the sources of professional information are presented, some distractors had to be changed because they did not work. Group VII of questions that try to identify the

level of instruction of each profession had to be eliminated in the pilot study because they were cast in the terminology of the old law and this caused some confusion with the new terminology. In the experimental study we used the new terminology and the students understood it better.

In Group VIII we changed the profession and its correlated answer in item 78 because all students gave the correct answer to this item, i.e., the distractors did not work. Further the correct answer to this item did not work as a distractor for other questions of this group, i.e., no one gave it as an answer.

The other modification were semantic in nature and they were caused by differences between the two languages.

The instructions were rewritten so that students could respond on separate answer-sheets, thus enabling re-use of the booklets.

# Administering and Scoring

The administration of the CDI in the pilot-study took place in October, 1973, and the experimental study in May, 1974. The great difference between these two dates was due to the work of rewriting many items of the C scale, the time spent in making arrangements with the school authorities, and the period of vacation that here in Brazil occurs during the months of January and February.

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In the pilot study, the examiners were the school counselors. They received a briefing and were informed of the purpose of the study.

During the pilot application, it was found that the students took from 21 to 75 minutes to complete the inventory.

The data were hand scored and the item analysis was made only by checking the choice of each student to test if all distractors were working. This analysis allowed us to rewrite the items mentioned above.

In the experimental study the examiners were specially trained teachers and psychology students. These teachers were not teachers in any of the schools tested, but they were selected because they had a long experience in test administration. Since the CDI is self explanatory the administrators had only to read aloud with the students the directions presented in the booklets. All the questions asked by the students during the application were recorded on a special report sheet provided by the examiner. A review of these reports revealed that most students had no reading difficulties in responding to the inventory.

In this study the students took about two hours to complete the CDI. This means they worked for two school periods without a break, and may have experienced some fatigue by the end of the session.

These data were machine-scored by the IBM 1230 optional

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scanner.

With the exception of the two items mentioned above, the weights of the B scale, judged by a group of Brazilian school counselors, coincided with that of the American group of judges.

#### Statistical Data

#### Pilot Study

This study was carried out on a sample of 82 eighth grade students from four public schools in different geographic areas of the state of Guanabara. Since we wanted to test student reading comprehension, we selected students enrolled in the lower achievement classes, and from each class tested only 50% of the students.

An analysis of test reports showed that many pupils did not have information about professions nor preparatory courses. Neither did they know the terminology of the devices used by some professions. The most difficult task for the students in answering the CDI was in the questions of Group II where they had to compare themselves with each other. We felt that they did not possess a common or internalized standard by which they could compare themselves to one another.

The table below shows the means and SD for each school separately.

TABLE I

Means and Standard Deviation for Each
School and for All Schools Combined

`				SCHOOLS						
SCALES	1		. 2		3		4		TOTAL	
	М	D	М	D	M	D	М	D	М	D
A	113.58	23.03	108.42	23.42	103.50	26.60	109.74	18.05	108.90	23.20
В	286.42	42.16	245.50	45.00	261.50	68.08	278.13	56.62	271.82	52.72
С	12.02	2.67	12.14	2.26	10.90	3.18	11.97	2.84	11.74	2.73
			•	_			•		, , , , , , , , , , , , , , , , , , ,	
TOTAL	408.79	55.10	385.41	62.92	372.00	71.565	397.13	71.60	390.84	65.50.

We can see that the CDI is adequate for this group. When we compared these results (i.e. mean scores) with those of Super, we found that the Brazilian students performed more similarly to 10th grade American students.

# Experimental Study

## Sampling

We drew our sample from the group of public schools that maintain guidance services. Since we wanted to observe the maturational process, the CDI was administered to the last two grades of grade school and to the first two grades of high

school where the students have from seven to ten years of schooling.

The grade schools were clustered into five groups according to geographical area and within these geographic clusters we drew a random stratified sample. The sample for the high schools was a random one. The unit of sampling was the school. Schools were chosen randomly until we had about 250 students in each grade. The next table shows the sample obtained.

TABLE II

Number of Schools and Number of Students in the Experimental Sample

	GRADE SCH	00L			•			
	Grade	8th Gr	ade	9th G	rade	10th G	rade	TOTAL
SCHOOLS	STUDENTS	SCHOOLS	STUDENTS	SCHOOLS	STUDENTS	SCHOOLS	STUDENTS	
9	1.33	7	234	8	253~	8	248	1048

Although this sample cannot be considered as truly representative of the population of students Grades 7 through 10 of the State of Guanabara, considering our objective and that this is an experimental study, we feel that the results obtained are quite workable.

### Grade Differences

The following table shows the means and standard deviations obtained in the four grades.

Means, Standard Deviations, and Number of Students by School Grade for Each Sub-Scale, and Total Scale

	•		<u> </u>	<u> </u>	
	Grades	Scales	N	N	SD
Į.	, 7	A B C TOTAL	313 313 313	103.35 270.78 12.25 386.38	19.78 52.46 3.67 63.48
GRADE SCHOOL	8	A B C	235 232 232 232	102.24 272.97 14.00	22.96 47.99 3.89 58.54
	9	A	253	111.29	17.10
, ·		B C	253 253	286.41 15.55	51.25
SCHOOL	10	TOTAL	253	113.80,	59.26 18.86
нтсн	10	B C	248 248	280.93 17.42	53.99 3.96
•		TOTAL	248	412.15	63.84

Comparing these means we obtained the following results:-

TABLE IV
Differences Between Grades

Grades	Scales	z	p
7/8	, <b>A</b> ,	-0.94	
,,,	70	1.14	<u>.</u>
,	C	5.51	**
	TOTAL	0.79	
	·	· · · · · · · · · · · · · · · · · · ·	
8/9	A	4.90	**
0/9	В	6.91	**
•	C	3.85	**
			**
	TOTAL	11.55	
9/10	A	1.56	,
3/10		-2.21	*
	B C	5.37	**
·			
.* *	TOTAL	-0.20	
* p	.05	•	د
** p	<b>301</b>		

We can see by these results that the only differences that were statistically significative were the ones between the last grade of grade school and the first grade of high school, i.e. between the 8th and 9th grades. These differences must be interpreted with caution because the scores were obtained not only from different grades but also across different school systems.

#### Sex Differences

Tests for the significance of differences between means of boys and the girls revealed in general no significant sex differences. We have significant differences for the B scale and the total score in the 7th grade and for the A and B scales in the 8th grade. It may be noted that these sex differences are not in any way systematic. We decided however to construct separate norms for the sexes and for the total group for each grade.

TABLE V
Sex Difference by Grade

		Masc	uline	Feminine		z	n
Grade	Scale	N	Х	N	X		P
				•			
7	Ā	134	101.35	179	104.85	1.57	
	В	134	260.50	179	278.47	3.00	**
·	C .	134	11.94	179 🐁	12.49	1.31	4
	TOTAL	134	373.79	179 🤻	395.80	3.05	
				√ <sub>144</sub>	20. /5		*
8	A	91	106.66	144	99.45	2.55	^
1	В	. 91	270.38	141	274.64	0.66	*
•	C	91	13.21	141	14.50	2.47	^
	TOTAL	91	390.25	141	390.71	0.06	
		20	111.18	214	111.31	0.04	
9	A.	39	288.13	214	286.10.	0.19	1
	В	39	15.85	214	15.50	0.46	1
	C	39		214	412.91	0.18	'
	TOTAL	39	415.15	214	412.91		<u> </u>
10	<b>.</b>	35	118.11	213.	113.09	1.80	
10	В	35	281.17	213	280.89	0.10	1
	C	35	18.29	213	17.28	1.70	1
	TOTAL	35	417.57	213	411.26	0.57	1.
	IGIAL	رد	1 72/13/	1	,		1

\* .05 \*\* .01

## Sex and Grade Differences

Within groups of similar sex across the grades the means differ and it seemed to us that the differences between grades could have been masked by sex differences across the grades canceling each other out. Thus we computed the differences between sex and grades and the next table shows these results.

TABLE VI
Differences by Gradeand by Sex

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MASCULINE								
Grade	Scale /	Z	p					
7/8	A B C TOTAL	2.13 1.42 2.41 2.03	* * *					
8/9	A B C TOTAL	1.36 1.56 3.15 1.87	**					
9/10	A B C TOTAL	1.88 0.52 2.73 0.15	*					

FEMININE									
Grade	Scale	z	p						
7/8	A B C TOTAL	-2.08 0.70 4.83 0.74	*						
8/9	A B -C TOTAL	4.92 2.20 2.46 3.48	** * **						
9/10	A * B C TOTAL	1.00 1.04 4.72 0.37	**						

<sup>\* .05</sup> 

<sup>\*\* .01</sup> 

These results are not very different from the total grade results. They showed, however, that the difference between 8th and 9th grades were due mostly to the girls. We might interpret this as a selective process in that in our country, the number of girls who attain the higher grades of instruction is lower than the number of boys. It is probable that the girls who continue are more mature.

#### Intercorrelations

The intercorrelations between the scales ranged from .65 to .99. The lower coefficients were found between C scale and the others. These findings indicate that the three scales are measuring the same construct, justifying the use of total score as well as overall measure of vocational maturity.

#### Norms

Norms were provisionally established from the data of the experimental study. These norms can be used for experimental purposes in public schools that offer counseling assistance to the students.

# Item Analysis

The item analysis on the C scale was made by a computer program that calculates the coefficient of difficulty through the percentage of right answers and the limits used were .20



and .80. The coefficient of discrimination was calculated by the point-bisserial correlation coefficient and the lower limit considered was .20. In Appendix B there is a resume of the results of the item analysis and we can observe that the C scale was reasonably well adapted to the group. With the exception of questions 62 and 63, all the items need only small changes. Generally, the items that presented distractors with a negative coefficient of discrimination show a lack of knowledge of the students on the subject involved in the item.

The difficulty of the items ranged from .30 to .60 and these limits can be considered good. The coefficients of discrimination, however, are low, ranging from .20 to .40. These results would indicate the necessity for more detailed study of this scale.

## Reliability and Validity

## Reliability

The reliability of the CDI was measured by the split-half method. The coefficients obtained in the pilot study were very low for some scales. The next table shows these results.

TABLE VII
Reliability Coefficients Obtained in the Pilot Study

•	N	_	r
	·	•	жж
•	82	•	0.54
,	82		0.86
	82		0.37
	. 82		0.89
	•		

Our results agree with those of Super in that the reliabilities for scales A and B are higher than for scale C.

Scale C, which had many items rewritten, was the least reliable. In the experimental study, the reliability coefficient for this scale increased to .58. However, it is still very low indicating that many of the items need further revision.

The reliability for the A scale was also very low in the pilot study. However, we do not yet have results on the experimental study. We think that the low coefficient was due to the items of Group II where the students had difficulty in comparing themselves to others.

# Validity

We could test only the content validity of the CDI scales.

The experts who judged the content of the three scales agreed that they assess the behaviors which represent important aspects of the construct of vocational maturity, but they are not sure if these behaviors can be observed in our students. We are also not sure if the results of this study will support these conclusions because the format of the scales allows the students to guess in answering the item.

#### Conclusions

The results of the study developed in Brazil suggest that we cannot reach any firm conclusions about the use of the CDI for our students. We believe that if the format of the A and B scales were changed to the Thurstone type, it would be more suitable for the Brazilian students. In the C scale it is too early to include items about the success of information about various professions, levels of schooling necessary, and other characteristics of professions, because the experience the students have had in this area is very recent and unreliable. Efforts should be made to develop this kind of information for use in the counseling programs to be developed in our schools.

The conclusion that we have reached is that the present form of the CDI is not adequate for Brazilian use and that we need further studies to reformulate the instrument so that it can achieve its aims here in Brazil.

APENDIXA

NORMS

# PERCENTILE NORMS (7th GRADE)

				_ <u></u>		
-	Percentile Rank	<b>A</b>	В	C	Total	Percentile Rank
	99 ' .	158	408	. 21	551	99
	95	138	371	18	500	95
•	90	128	343	17	469	90 .
	85	123	326	16	453	85
	80	119	313		436	80
	* 75	116	302 `	15	426	75
	70	112	298	14	415	70
	65 ₊	109	290		409	65
	60	108	283	13	401	60
•	55	106	275	_	391	55
•	50	103	267	12	384	· 50
	45	100	261	., <del>-</del>	376	45
	40	98	258	11	369	45
	35	; <b>9</b> 6	249	_·	363	35
	30	94	242	10	352	30
	25	91	234	_	344	25
	20 20	87	228	9	337	20
	15	83	218	8	326	15
	10	78	206	. 7	307	10
	, 5	70	190	6	289	<b>*</b> 5
	ı J	61	163	4	252	1
			-			

Percentile Rank ^	A	. B	. C	Total	Percentile Rank
99	146	392	23	. 511	, 99
- 95	135	361	20	488	95
90	129	340	-	472	۶ 90
85	124	324	18	<sub>/</sub> 451	85
80	121	316	17	444	. 80
75	118	307	· -	437	75
70	115	. 299	<sub>.</sub> 16	426	<sub>10</sub> 70
65	111	290	<del></del>	419	<sub>.</sub> 65
. 60	108	284	15	413	60
55·	107	.277	-	401	55
50	104	266	14	° 386 ŧ	50
, ·       45	100	260		373	45
40	· 98	256	13	364	40
<b>3</b> 5	95	252	-	360	( 35
30	93	246	12 .	355·	30 ,
25	90	238	11	. 346	25
20	87	232	<b>-</b>	3,38	20
15	81	226	10	. 329	15
	75	215	9	319	10
. 5 .	67	197	7	302	5 .
1	51	177	4	276 <sup>.</sup>	1
					•

# PERCENTILE NORMS (9th GRADE)

Percentile Rank	A	В	. C	Total	Percentike Rank
99	148	428	24	581	99
, 95	138	374	22	521	• 95
90	134	352	20	494	90
85,	131	<sub>ه</sub> 334	<sup>*</sup> 19	473	85
80	125	<sup>°</sup> 324		459	. 80
75	122	317	18 .	454	<b>7</b> 5
70	120	310	<u>-</u>	439	70
65₹≁	117	305	1 <b>7</b> 🖟	434	65
60 👊	115	300)	16	426	60
· 55	113	298	, <del></del>	417	. 55
. 50	111	285	-	409	. 50
·s. 45	110	275.	15	399	.45
40	108	266	-	392	40 .
35	. 105	261	14	387	. 35
. 30	103	ap 256	- 0	380 🗞	30
25	100	252	13 ′	371	25
20	97	244	12	\364	· 20
15	92	233	11	<b>3</b> 58	Î5
10 1	89	229	10	<del>\</del>	10
5	82	216	8	329	5
1 _	73	170	7	. 273	1 .

	Percentile Rank	A	В	C	Total	Percentile Rank
	99	158	405	25	562	99
•	95	146	372	23	531	9.5
	90	137	353	<b>2</b> 2	494	90
	85	133	339	_	478	85
	80	130	329	21	470	80
	75	126	317	20 🦟	452	75
	79	124	311	-	444	70.
	65	122	301	19	435	65
•	60	120	. 292	· _ ·	426	. 60
	55	117	286	18	420	. 55
Ĺ	50	113	278	<u>-</u>	412	50 ~
[	45	110	. 272	17	404	45
•	40	109	266	<del>-</del>	396	40
• •	35	106	259	16	385	35
	30	104	252	<b>1</b> 5	379	30
	25	·* 102	246	-	368	25
	20	97	241	.14	362	20
	.15	<sub>.</sub> 94	231	13	347	<b>15</b>
	. 10	88	212	12	339	10
	5 _	<b>80</b> .	195	10	309	5
	1	75	158	8	267	1 .

# PERCENTILE NORMS (7<sup>th</sup> GRADE) BOYS

ε				and the second	
Percentile Rank	Α .	В	C	Total	Percentile Rank
99	158	407	22	542	99
95	131	352	17	491	95
90	123	327	•	463	90
85	119 .	315	16	436	85
80	115	304	15	422	80
75	111	298	14	410 .	75
70	109	286	_	404	70
65	107	280	13	394 .	<b>65</b>
60	106	275	-	392	. 60
<sup>™</sup> 55	104	266	12	383	- 55
50	102	261	, <del>.</del>	378	. 50
45	. 99	257	-	370	45
40	98	249	11	360	. 40
35	96 · 1	239	•••	352	35
30	93	230	10	343	<sup>3</sup> 30
25	91	223	9	337	25
20	87	211,		323 🗼	20
. 15	83	204	8 .	307	15
10	78	193	7	292	70
5 .	67	176	- 6	270	5
1	60	150	3	246	<b>/</b> 1

PERCENTILE NORMS (7<sup>th</sup> GRADE)
GIRLS

			C	Total	Percentile Rank
99	163	431	21	590	99
95	141	372	18	506	95
90	129	348	17	476	90
85	125	332	-	460	85
80	122	<b>321</b> /	16	449	. 80
75	119	311	15	434	75
70	115	300	-	426	70
65	112	296	` 14	417	65
60	109	290	_	410	60
55	107	282	13	403	55
<b>50</b>	104	273	12	<b>3</b> 89	<b>50</b>
45	101	267	_	<b>381</b>	45
40	98	262	11	373	.40
35	97	256		368	35
30	95	249	. 10	360	30
25	92	241	<b>-</b>	350	25
20	87	234	9	342	20
15	84	231	8	334	15
10	·* 79 ˈ	218	7	. 324	10
5	72	206	6	301	5
1	62	186	5	288	1

PERCENTILE NORMS (8<sup>th</sup> GRADE)

Percentile Rank -	A	→ B		e .	Total	Percentile Rank
99	155	399	: "	22	525	99
95	133	345	·	19	483	95
90,	127	336	,	18	460	90
85	125	320		, 17	445	85
80	123	310		_	441	. 80
<b>7</b> 5	121	307		16	432	<b>7</b> 5
70	117	298		15	424	70
65	114	290			418	65
60	112	283		, 14	415	. 60
55	108	273	•		401	. 5 <b>5</b> ~
50	107	263		13	391	50
45 <i>∱</i> ∉,	106	259	. · ·	<u>.</u>	373	45
40	100	255		-	366	40
35	99	<b>25</b> 2		12	363	35.
30	97	247		11	356	30 -
25	93	239			350	25
20	91	232	•	10	342	20
15	88	226		9	334	15
10	83	212		7	320	10 ·
5 - •	· 78	191	•	6	309	5
1 .	69	161		4	278	1

# PERCENTILE NORMS (8<sup>th</sup> GRADE) GIRLS

Percentile Rank	A	В	<b>C</b> . , .	Total	Percentile Rank
99	144	389	23	508	99
95	136	361	20	489	95
90	130	345	19	477	90
85	123	332	<b>18</b> .	467	85
80	119	320	<u> </u>	451	80
75	117	307	<b>i</b> 7	438	75
70	114	299	16.	430	70
65	109	290	_	421	65
60	107	285	. 9	412	60
. 55	104	279	15	401	· 55
50	101	269	<u> </u>	382	50
45	98	2 <i>6</i> 0	14	373	45
40	95	257		364	40
. 35	93	252	<b>13</b> .	358	35
30 -	90	245	-	354	30
25	87	237	12 ′	342	25
20	83	232	11	333	20
15	76	227	10	328	15
10	72	217	9 .	- 319	10
. 5	61	210	8	300	5
1	1	181	6 📜	276	1,

PERCENTILE NORMS (9<sup>th</sup> GRADE)
BOYS

Percentile Rank	Α	* <b>B</b>	C	Total	Percentile Ŗank
99	145,	. 434	<b>2</b> 6	579	99
95	144	427	23	575	95
90	130	389	22	531	90
<b>85</b> .	129	354	21	490	85
80	122	333 .	<sup>°</sup> 19	469	80
75	,120	328		460	75
70	119	311	18	445	70
65	116	307	17	437	65
60	_	299	<b>16</b> .	429 ,	60
55	115	293	4	421	55
50	112	284	÷	413	50
∴ 45	111	272	15	405	45
40	110	268		394	40.
35	109	260	, ,14	386	35
30	108	259	13	370	- 30
25	107	244		366	25
20	96	232	12	363	20
15	91	229		343	. 15
10	86	20 <u>9</u>	11	329	10
5	. 79	207	7	310	5
1	70	- 169	. 6	259	1
			•	<b>.</b>	

PERCENTILE NORMS (9<sup>th</sup> GRADE)
GIRLS

Pe	rcentile Rank	<b>A</b> .	В .	C	Total	Percentile Rank
-	· 99	161	418	. 23	581	99
	95	. 138	373	21	513	95 ·
	90	135	349	<b>2</b> 0 ·	490,	90
•	85	130	333	19	465	85
	80	125	\ 322	-	457	<sup>*</sup> 80
	<b>7</b> 5	123	317.	18	447	75
	70	120	309	17	438	. 70 🖟
	65	117	305	<del>.</del>	433	65 '
	60	114	300	16	426	60
•	55	112	295		417	55
• •	50	111	<b>∞28</b> 5	<b>-</b> .	409	50 \$
	45	- 109	276	15	398	45
•	40	106	267 '	÷	392	40
	35	″ 104	260	14	387	<b>3</b> 5
	30	102	256	_ ' ;	380	30
	25	100	252	13	374	25
	20	97	<b>2</b> 45 、	12	364	20
	15	93	236	11	358	: 15
	10	89	229	ío í	351	10
	5	83	223	8	337	5
	1.	76	190	7	302	1

# PERCENTILE NORMS (10<sup>th</sup> GRADE) BOYS

Percentile Rank	Α.	В.	C,	Total	Percentile Rank
99	149	388	24	554	99
95	148	383	23	540	. 95·
90	136	348	22	496	90
85 <sup>°</sup>	133	338	-	478	85
80	131	335	21	476	80
75 ·	125	322	20.	458	75
70	124	304	<b>-</b> .	446	70
65	123	294	-	424	65
60	122	278	19	419	60
55	120	277		415	55
50	118	276	18	408	50
45	. 115	269	-	- 403	45
<b>``40</b>	111	267	-	402	40
35	_	260	17	397	35
30	110	257	<b>-</b>	386	30
25	108	252	-	383	25
20	106	241	16	376	20
15	105	234		365	15
10	102	212	15 `	340	101
5	96	188	13	318	51
1	86	174	9	307	1

# PERCENTILE NORMS (10<sup>th</sup> GRADE) GIRLS

Percentile Rank	A	В	C	Total	Percentile Rank &
99	158	437	26	597.	99 .
95	145	372	23.	531	95
90	138	353	22.	494	90\
85	133	339	21 .	477	85
80	130 '	327	-	469	80
75	126	316	20	452	75
70	124	. 311	<u> </u>	444	70
65	122	301	19	435	65.
60	120	293	<b>-</b> .	427	<b>4</b> 60
55	116	288	. 18	422	55 -
50	. 113	282	-	412	50
. 45	110	272	17	405	45,
40	108	266 ·	-	394	. 40
35	106	259	16	383	35 .
130	103	251	15	377	30
25	100	246	14	365	25
20	96	240	13	360	. 20
15	92	231	1,2	347	15
10	86	212	12.	332	10
5	78	195	10	307	5
4,1	75	157	8	266	, . 1

#### APENDIX P

#### SUMMARY OF ITEM ANALYSES

•		•			
		7 <sup>th</sup>	8 <sup>th</sup>	9 <sup>th</sup>	10 <sup>th</sup>
VI	62 63 64 65 66	ID//AFV(1) ID/WAFV(4-5) AI ID/WAFV(4) AI	ID/WAPV(4) ID/MAPV(2) AI WAPV(4) ID	ID/VD WAPV (1) WAPV (4) ID/VD AI	ID/WAPV(3). AI AI AI AI
VII	67 68 69 70 71 72 73 74	AI AI OD AI AI WAPV (3) WAPV (5)	AI AI VE ID/WAPV(1) AI AI	AI WAPV(1) AI ID AI AI AI AI VE	AI AI ANF(2) ANF/VE(3-5) AI AI AI VE
VIII	75 76 77 78 79	ID/WAFV (C) AI AI AI WAFV (B-D)	AI AI AI AI	AI AI AI WAPV (2)	AI VE VE AI OD
IX	80 81 82 83 84 85 86 87 88 90 91	ID/MAPV (B) AI AI WAPV (4) ID/MAPV(4) ID AI WAPV (A) AI AI ID/MAPV(4) OD	ID/WAPV (4) WAPV (2) AI WAPV (4) AI WAPV (1) AI WAPV (3) AI ID ID/WAPV(4) AI	ID/NAPV (2) ID/NAPV (2, 3,) AI AI OD ID ID OD OD OD ID/NAPV(4) AI	ID/WAFV (2) ID/WAFV(2-4) AI AI AI AI AI AI AI ID/WAFV(4) WAFV (2)

AI - acceptable items

OD - omissions doubtful

WAPV- wrong alternatives with positive value

ID - insufficient discrimination

VD - very difficult

VE. - very easy

ANF - alternative not functioning